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Hawaii's Pollution Prevention Information
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HAPPI-Farm 9

Minimizing Pollution Risk from
Storage and Disposal of Chemicals and Fuel

Many different chemical products are used on a farm in addition to fertilizers and pesticides. These include materials needed for vehicles and other machines (including gasoline, oil, batteries, and antifreeze), paints and preservatives, and household chemicals such as cleaning supplies. All of these chemicals can cause water pollution if they are not stored and disposed of properly. This worksheet provides information about proper storage and disposal practices to help you identify pollution risks from your current activities. It will also help you develop an action plan to minimize water pollution risks.

Petroleum products

Liquid petroleum products such as fuel and machine oil can cause water pollution when they escape from above-ground or underground storage containers. Even a few quarts of gasoline in the groundwater can cause severe pollution. At low levels, fuel contaminants in water cannot be detected by smell or taste, yet the water may be contaminated enough to affect human health. Petroleum products contain various potentially toxic compounds, including ethylene dibromide (EDB), which has been found to cause cancer in tests with laboratory animals, and benzene, which can cause cancer in humans.

Petroleum storage tanks

If there is a petroleum storage tank on your property, you need to assess your storage system to guard against the contamination of soil, groundwater, and surface waters. Your tank should be located as far as possible from surface waters. Tanks that are no longer in use should be removed from the property.

Underground storage tanks

Underground storage tanks (USTs) present higher risks to groundwater because there is a greater chance that they might leak into the ground. USTs that store either petroleum or hazardous substances are regulated by the Hawaii Department of Health's Underground Storage Tank Section. Although underground tanks that are used for storing other materials or for other purposes, such as septic tanks or emergency spill tanks, are not regulated, precautions must still be taken to prevent them from leaking. By law, you are liable for damage caused by anything leaking from your tank.

Most older underground storage tanks are made of steel and contain little or no protection to prevent corrosion. Salty, wet, or acidic soils can significantly increase the rate of corrosion of these tanks. Proper maintenance and leak-detection equipment can help prevent any risks to water quality. If an underground tank is no longer being used, the Department of Health (DOH) recommends that you hire a licensed contractor to remove it. You can obtain more information on storage tank maintenance and removal from the DOH Underground Storage Tank Section (see Contacts, p. 4).

Whether you have underground or above-ground storage, you need to develop a system that guards against leaks and spills. Equipment should be fueled on a concrete pad that has secondary containment, such as a curb around it to catch spills. Above-ground tanks should be made of high-quality steel and have a secondary containment system that holds 125% of the total volume stored.

Monitoring fuel use

Monitoring your fuel use is worth the effort, because you can detect a leaking fuel storage tank before large losses of fuel occur. This is especially important for underground tanks where you cannot directly see evidence of a leak. An easy way to monitor your fuel use is to have a pre-marked stick to measure the level of fuel in the storage tank. Check the level of fuel in the tank before you withdraw fuel, and make sure the level in the storage tank has not changed since the last use. If the level changes between withdrawals, then the tank may be leaking.

Fuel and oil storage

Always store fuels in approved fuel-storage containers labeled with the type of fuel. Oils and machine fluids (e.g., transmission and brake fluids) should be stored in their

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original, labeled containers. Storage areas should have a floor made of concrete or another impermeable surface that has a spill barrier. Areas should be well ventilated to prevent heat and fumes from building up. They should also be secured from theft, children, and pets. If you regularly store large amounts of fuel, consider installing an above-ground tank.

Disposal of fuel, machine fluids and batteries

Using up extra gasoline, diesel fuel, kerosene, and motor oil poses the least risk of water pollution. If these cannot be used up, they should be recycled where possible. Check with your county recycling program (see Contacts) for additional information on what can be recycled on your island and where it can be recycled.

By state law, automotive battery retailers are required to accept the old battery for recycling when a new battery is purchased. If you are not buying a new battery but have a battery to dispose of, you can ask your retailer if they will accept extra batteries; if they will not, contact your county hazardous waste office.

On Oahu, used motor oil can be disposed of in oil-change boxes that can be purchased at many retail outlets. The materials in the box soak up the used oil, and the box is deposited in the trash for transport to H-Power, where it is burned. In other counties, some gas stations will accept used oil and fluids for recycling. If any of these products cannot be recycled, they must be disposed of as hazardous waste. HAPPI-Home-5 on safe disposal of hazardous products contains general information on proper disposal practices. Contact your county hazardous waste and recycling office for more detailed and island-specific information (see Contacts, p. 4).

Other potentially hazardous chemicals

Information on storage and disposal of fertilizers and pesticides can be found in HAPPI-Farm 4, *Nutrient management*, and HAPPI-Farm 5, *Pest management*, respectively. Other chemicals such as paint, disinfectants, cleaners, and glues are also commonly found on farms. If stored and disposed of properly, these products have a low risk of causing water pollution. However, improper storage and disposal practices make water pollution more likely.

READ THE LABEL before buying or using any product. Check the label to determine if it is the right product for your needs. The label also tells you how properly to use and store the product, and it provides information on the product's toxicity. Chemicals labeled "CAUTION" have relatively low toxicity. Chemicals labeled "WARNING" have moderate toxicity. Chemicals labeled "DANGER" have high toxicity. The equipment you need to use the product, including personal protective equipment, will depend on the individual chemical and the toxicity. Be sure that you have the equipment you need before you purchase the product. The label also contains information on other potential hazards and first aid.

Chemical storage

Chemicals should be stored in their original, labeled containers in a secure, well ventilated storage area. The floor of the storage site should be made of sealed concrete or some other easily cleaned, nonpermeable material with a raised lip that allows the area to hold a minimum of 125% of the total volume of materials stored. Carpeting, wood, soil and other absorbent floors should not be used because they are difficult or impossible to decontaminate in the case of a leak or spill. For easier clean-up, shelving and pallets should be made of nonabsorbent material such as plastic or metal. If wood or fiberboard materials are used, they should be coated or covered with plastic, polyurethane, or epoxy paint.

The storage facility should be located as far as possible from streams and other water bodies and in an area with a very low risk of flooding. Small amounts of chemicals can be safely stored in a locked cabinet or room. However, if you store significant amounts of chemicals on a regular basis, you may want to consider constructing a designated storage building with a concrete floor, secondary containment, and a temperature and humidity controlled environment. In all cases, make sure your chemicals are protected from theft and secured from children and animals.

Chemical disposal

Disposing of potentially hazardous products on your property can cause significant risks to water quality, especially if unused products and even empty containers are disposed of in or near streams or other water bodies. If they are not properly rinsed, empty containers can be a source of pollution. As they decay, water can enter and flow out, carrying the chemical with it. Containers should be rinsed at least three times ("triple-rinsed") and the rinse water disposed of the same way as the chemical itself. Then they should be punctured so that they cannot be used for something else. Burning potentially hazardous products is also not advised, because some containers (such as aerosol cans) may explode and others may release toxic fumes.

HAPPI-Home 5 on safe disposal of hazardous products contains additional information on how to appropriately dispose of a wide range of common farm and household chemicals. Similar information is also available from the City and County of Honolulu Department of Environmental Services on the Web at <http://www.opala.org/houshaz.html#dispose>. These resources provide general disposal information on

various types of products. Read the label for specific instructions for your particular product. Your county hazardous waste office and the Solid and Hazardous Waste Branch of the Hawaii Department of Health (see Contacts, p. 4) can also provide additional information.

Assessing your risks

Complete the risk assessment table below to determine your water pollution risks. For each category, choose the set of practices that best fits your situation. If the category does not apply to your operation, leave it blank.

Risk Assessment Table for Storage and Disposal of Chemicals and Fuel

	Low risk	Moderate risk	High risk	Your risk
Petroleum storage tank type	Well maintained above-ground tank	Moderately well maintained above-ground tank or new underground tank	Poorly maintained above-ground tank or underground tank >15 years old	❑ low ❑ moderate ❑ high
Storage tank location	Tank located >100 yards from surface water bodies	Tank located between 100 feet and 100 yards from surface waters	Tank located <100 feet from surface waters	❑ low ❑ moderate ❑ high
Tank containment (above-ground tanks and fueling areas)	Fueling areas and areas under tanks have impermeable surfaces (concrete) and containment structures (curbs) that will hold 125% of total tank volume	Fueling areas and areas have impermeable surfaces (concrete) and containment structures	Fueling areas have permeable surfaces (dirt, gravel, etc.) with no containment structures	❑ low ❑ moderate ❑ high
Tank monitoring	Monitor tank fuel levels every time fuel is drawn and keep records of fuel use	Periodically check tank fuel levels and monitor fuel use management plan	Seldom check tank fuel levels or monitor fuel use	❑ low ❑ moderate ❑ high
Fuel, oil and fluids (storage)	Items stored in approved containers in a secure area with concrete floor and spill barrier; or, no fuel, oil, or machine fluids stored	Items stored in approved containers secured area with concrete floor but no spill barrier	Items stored in unapproved containers, in an unsecured area, or in an area with a nonconcrete floor	❑ low ❑ moderate ❑ high
Fuel, oil and fluids (disposal)	Items used up or recycled	Items disposed of as hazardous waste	Items disposed of on property or in municipal landfill	❑ low ❑ moderate ❑ high
Chemical storage	Chemicals stored in original containers in a secure area with concrete floor and spill barrier; small amounts of chemicals stored in locked room or cabinet; or, no chemicals stored	Chemicals stored in original containers in a secure area with concrete floor or secure cabinet without secondary containment	Chemicals not stored in original containers, or chemicals stored in an unsecured area, or in an area with a nonconcrete floor	❑ low ❑ moderate ❑ high
Chemical disposal	Unwanted chemicals used up; chemicals and containers recycled where possible; milder chemicals disposed of appropriately.	Used chemicals disposed as hazardous waste; containers triple rinsed and disposed as solid waste	Unused chemicals and used containers not disposed of properly.	❑ low ❑ moderate ❑ high

Your Action Plan

After assessing your management practices, you can take action to change practices that may be causing water pollution. For areas that you identified as high or moderate risk, decide what action you need to take and fill out the Action Plan below.

Write down all your moderate-risk and high-risk activities below	What can you do to reduce the potential risk for water pollution?	Set a target date for action
Samples of action items:		
Oil and machine fluids are stored in an open shed.	*Enclose shed and install a lock on the door to prevent unauthorized access.*	*Before the end of this month.*

Contacts

Hawaii State Department of Health, Solid and Hazardous Waste Branch (including underground storage tanks, disposal, and recycling): Oahu: 586-4226; Hawaii: 974-4000 ext. 64226; Kauai: 274-3141 ext. 64226; Maui: 984-2400 ext. 64226; Molokai, Lanai: 1-800-468-4644 ext. 64226

County-specific information:

City and County of Honolulu, Department of Environmental Services 523-4774, <http://www.opala.org/> (both disposal and recycling)

Hawaii County Solid Waste Office 961-8339 (disposal); Recycle Hawaii: 329-2886 or 961-2676 or <http://www.recyclehawaii.org/what.htm> (recycling)

Maui County Department of Public Works: 270-7880 (disposal); Recycle Maui County 270-7874(Maui), 565-6478 (Lanai), 553-3869 (Molokai), <http://www.maui.net/~recyclemaui/> (recycling)

Kauai County Solid Waste Office: 241-6880 (both disposal and recycling)

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